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Primary succession changes diversity, abundance and function of soil microorganisms across glacier forelands

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Primary successional ecosystems, such as glacier forelands, present an ideal opportunity to study the biological colonization of substrates. In a glacier foreland, time is substituted by space by using the distance from the retreating glacier as a proxy for soil age. Since the ice covers of many glaciers have receded over the past century, glacier forelands have released substrates for soil development. Autotrophic colonizers are expected to be important in the initial stages of the primary community assembly. Microbial growth, however, might also come from allochthonous dead organic matter and living invertebrates in these newly formed environments. Recently, a previously unrecognized heterotrophic phase which should allow the initial establishment of functional communities was proposed. Current studies in microbial ecology account for both autotrophic and heterotrophic colonization along primary successional gradients, such as glacier forelands, land lifts, floodplains, landslides and volcanoes. The presentation will give a summary of studies focusing on abundance, diversity and function of soil microorganisms along selected successional stages within the forelands of two glaciers in the Austrian Alps.